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# SAAB

**Twenty Years of Innovation**

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With automotive manufacture in this country tied to giant industrial complexes, it has been a special pleasure to take a long look at one of the world's smallest and most unusual carbuilders. Saab cars have always been of unique specification – and the story behind them one of absorbing, and sometimes amusing, interest. From the giant presses that were installed upside down at the Saab factory during the early years to the enviable record the cars have run up in rallying since, the Saab history is one of an individualist manufacturer going its own way and making it on its own terms. And producing some mightily appealing cars along the way.

We take pleasure in selecting the unique story of Saab as another *AUTOMOBILE QUARTERLY* reprint. The history which follows was originally published under the title "Saab: The Other Swede" in *AUTOMOBILE QUARTERLY*'s Volume XIII, Number 3. Its author is Stan Grayson, associate editor of *AUTOMOBILE QUARTERLY*, and an enthusiast of Saab cars since his college and graduate school days in the mid-Sixties. His trip to Sweden for research in the company archives, interviews with many of the people who have shaped the Saab automotive adventure from the beginning and photography of historic Saabs from the factory museum as well as contemporary Saabs have combined to provide the most comprehensive, intimately detailed and colorful look yet at this intriguing Swedish carmaker.

Why Saab? Should anyone ask, this history will answer.

L. Scott Bailey  
Publisher and President

# SAAB: The Other Swede



by Stan Grayson

Were he a man given to recollection, Gunnar Ljungström could find a lot to think about in his comfortable book-filled apartment overlooking the Göta canal. There he can watch the big ships churn by a hundred yards from his windows, ships on their way from the Trollhättan locks up-river and across Sweden. But Ljungström—now seventy—is not given to recollection. Instead, like so many outstanding engineers and designers, his thoughts tend to the future, to challenges ahead and not to the past, riddled as it must be both with mistakes and confounding problems solved.

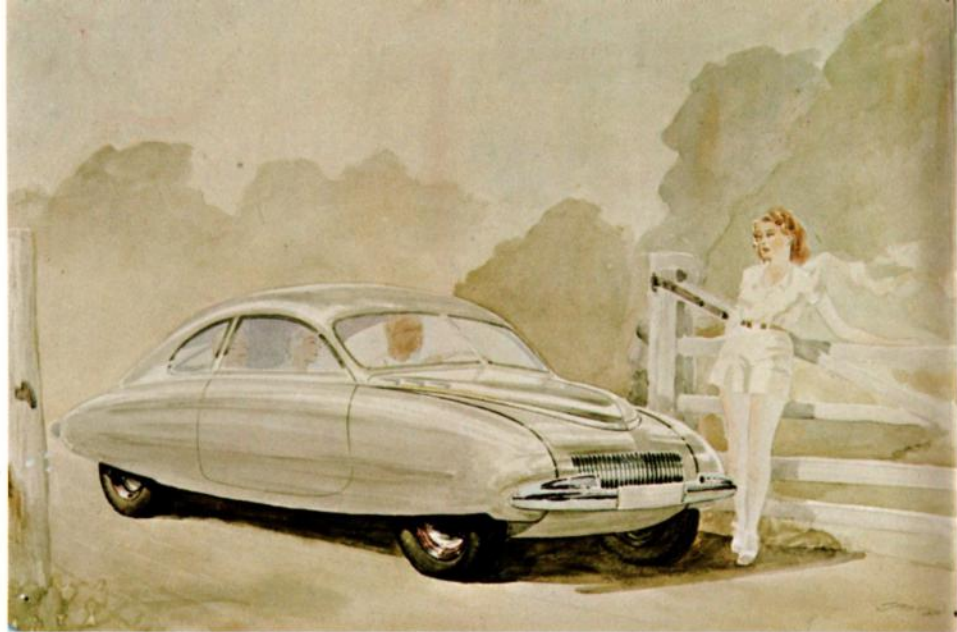
And yet it was Ljungström who in 1945 was transferred from his post as wing designer with an eight-year-old airplane company and asked to create something different, not an airplane but a wholly new automobile. It was to be not just another car but a sort of Scandinavian *Volkswagen*, a vehicle that people would be able to both afford to buy and to run. "I was involved from the beginning as a designer," the taciturn Ljungström will admit of his part at Saab. From that beginning stems one of the most innovative chapters in postwar automotive history. For the car which Ljungström and the talented men who worked with him devised has—sometimes for better and sometimes for worse—always stood apart, a true individual in a world of automotive sameness.

Saabs have always been paradoxical cars, modestly-powered sedans which have repeatedly defeated far more exotic and expensive machinery in Europe's toughest and most prestigious rallies. The dependable Saab 96 is arguably the finest cold weather passenger car ever built, yet inclement weather, especially rain, was for many years its bane. In its two-stroke versions, it was a car of astonishing simplicity, yet diagnosing faults or keeping that simple engine together for high mileages often perplexed mechanics, at least in the U.S. It is a car built by one of the world's smallest automakers yet the firm stands in the forefront of automotive safety and emissions technology.

Although Saab cars now date back exactly twenty-five years, there was no plan to build automobiles when the company was founded beneath Europe's gathering war clouds in 1936. "When Adolf Hitler was at his most dramatic in the Thirties," Gunnar Ljungström recalls, "he managed to affect a large part of the world. In Sweden the result was a decision to increase rather than reduce our defense forces. Saab was begun—with a state guarantee—as a company to build airplanes."

In addition to the government's backing, substantial private capital was also needed. This was provided chiefly by two sources: the enormously wealthy Swedish financier Marcus Wallenberg and Axel Wennergren, a Swedish refrigeration pioneer. The company they helped establish—called Svenska Aeroplan Aktiebolaget (Saab)—was incorporated in April 1937 and a factory was constructed in Trollhättan (literally translated: Troll Hill) on Sweden's west coast. From the beginning Saab had business associations with several United States companies, for not only was the new firm licensed to build the North American NA1-16-4 trainer and Northrop Douglas 8A1-1 dive bomber (as well as Germany's Junkers 86K bomber), but some forty engineers from Boeing and other U.S. firms went to Sweden to help set things up. Gunnar Ljungström was by then hard at work at Saab, his primary task being wing structure design. He had joined the company after a four-year stint in England where beginning in 1932, he had worked for both Standard Triumph and Rover, helping to develop an automatic transmission designed by his multi-talented father, an engineer of great breadth and distinction.

By 1939 Saab began expanding and took over the aircraft-building facilities of AB Svenska Järnvägsverkstäderna (ASJ)—primarily a railway car builder—in Link-



öping some 180 miles south of Stockholm. While ASJ's subsidiary had been geared for the production of light aircraft, Saab now began expanding the company's production facilities for something new, not construction of another licensed aircraft but of a Saab-designed two-seat dive bomber and reconnaissance plane. The Saab 17 first flew in 1940 and more than 300 were in use when production ended in 1944 and the firm's second plane—a twin-engine bomber designated the Saab 18—went into service. But although Saab would produce a variety of unique and successful aircraft (including the only pusher propeller, ejection-seat-equipped fighter produced in quantity during World War II—the Saab 21—and later western Europe's first swept wing jet fighter—the Saab 29), the war's end convinced company executives to diversify into other markets. Under the guidance of Saab directors Ragnar Wahrgren and Sven Otterbäck, the decision was made in 1945 to build an inexpensive passenger car for a Swedish market clamoring for such vehicles.

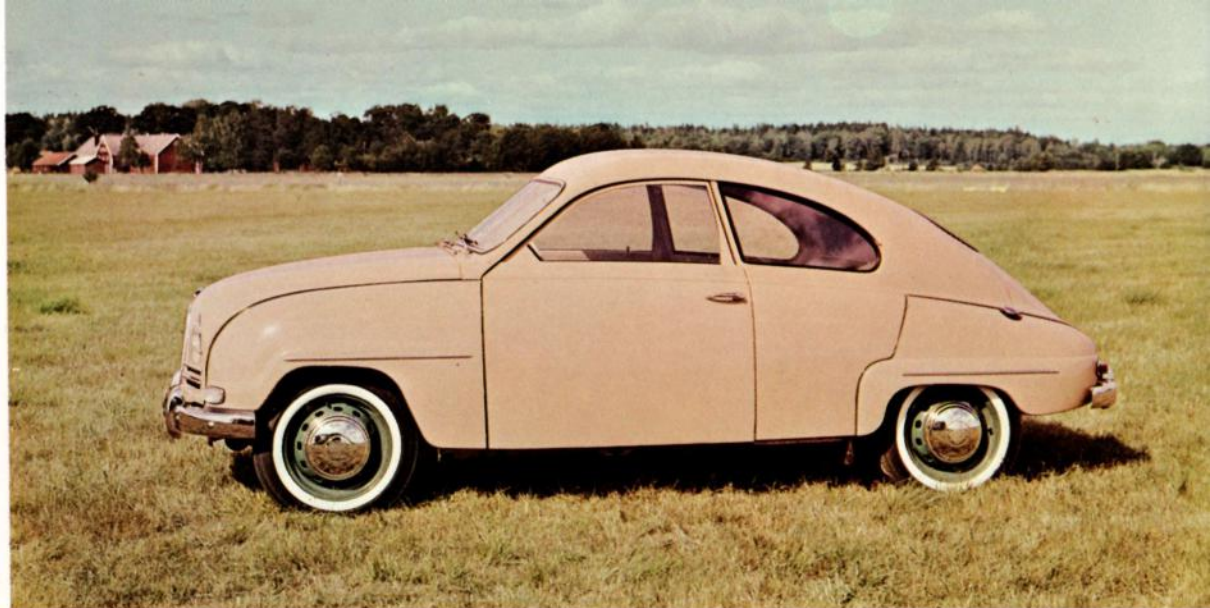
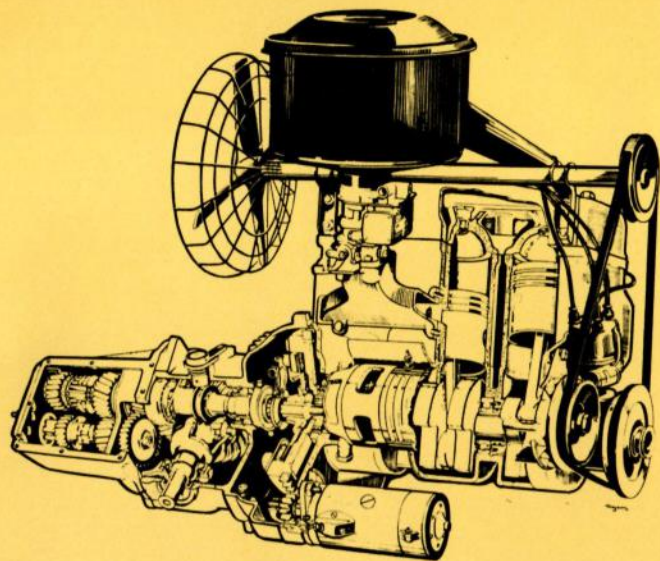
Gunnar Ljungström began preliminary design ideas for the car with the aid of a tiny fifteen-man staff. "I was only as much of a car enthusiast as boys are generally," Ljungström said of those days. "Of our staff, perhaps two of us had driving licenses."

But Ljungström's ideas about automobiles were very definite and influenced largely by the low price requirement for the new car and also by the prewar success of the D.K.W. in Sweden. "A simple car like the D.K.W. could be produced with a minimum of special tools," Ljungström told me. "This was an important consideration for us as tools would be a major expense. Unlike the D.K.W., however, I never accepted anything but a metal body. Obviously steel is safer." The two-stroke engine, however, despite its lower tooling costs, would prove a mixed blessing and engender controversy both within and without Saab for over a decade.

One day while Ljungström was busily at work, Saab's newly-hired technical illustrator walked into the office with some automobile sketches under his arm. "None of us working on the car were really stylists," Ljungström said, "and then Sixten Sason came up with this sketch and we made a model and everyone fell for it







as being much like an airplane.” In fact, the car in Sason’s drawing looked like the sliver of a wing section, a trifle bulbous at the nose but smooth and with enclosed wheel arches. A year before Pininfarina, Kaiser-Frazer and Studebaker would set the postwar styling trend of integrated fenders and bodies, Sason’s car employed this design configuration. But then Sason—pilot, motorcyclist, artist, industrial designer—was one of those rare people, a true original. Ljungström believed him a genius, intensely creative yet with a firm grasp of what was practical.

Born in 1912, to a stone mason who encouraged his son to go to Paris and study art, Sason eventually designed everything from sewing machines to fighter planes. In the early Thirties he drew a little passenger car with a transverse engine-gearbox unit echoed a quarter century later by the Austin Mini. He designed a car with safety doors that slid open and shut, features seen on some of today’s ESV’s. In 1941, he drew a delta-winged missile-firing jet fighter that, although it must have seemed like a Buck Rogers dream in its day, is shockingly similar to the Saab Draken and Viggen fighters of the Sixties and Seventies. His interests went even further. For Huskvarna, the motorcycle company which expanded into other areas, Sason designed a line of home appliances. For ASJ, buses and trains. During 1955 he was consulted by Victor Hasselblad about designing parts of the famous SLR camera system eventually used by American astronauts on the moon.

In 1946, Sason and Ljungström got down to details of the new Saab car. “We discussed whether it should be front or rear drive,” Ljungström told me. “For no very technical reasons, we decided it should be front, mainly to keep most of the mechanical parts at one point and also to increase interior room. Sason planned a unit configuration for the engine and gearbox and we thought this would help simplify production. At the time, we really didn’t consider the steering and handling benefits of front wheel drive.”

Work on the prototype car—called Project 92—proceeded with some difficulty. Most of Europe lay in rubble; passenger car production had all but ceased and up in Sweden, the little Saab design team labored mainly on its own with no one to consult on either supply or engineering difficulties. If they wanted to learn how others had approached a particular problem, their only recourse was a nearby

junkyard from which they could ferret parts for study. Still, the first Saab prototype was completed in 1946, an extremely advanced vehicle in many respects. Like all Saabs ever since, the car possessed front wheel drive (now used on nearly every small European sedan) and a unit-constructed body—with a fully enclosed bottom—of great strength and aerodynamic efficiency. Wind tunnel studies at the Royal Institute of Technology in Stockholm revealed a drag coefficient of only 0.32. Of postwar sedans produced in any quantity, it may only be Panhard and Citroën which so stressed aerodynamics, in both cases five to ten years after Saab. If it was smooth, the little prototype was also rugged and the 92 may possibly be the strongest little sedan ever built. With its 25 hp vertical twin two-stroke of 764 cc, the car achieved 60 mph. Suspension was independent all round and based on transverse torsion bars and telescopic shocks.

As Saab looked ahead to production of the 92, the company received a sudden shock from their well-established competitor, Volvo, which was also planning a new car. It was the vehicle’s projected price which dismayed Saab engineers. Volvo announced that its new car would sell for only 4400 kroner (a Swedish kroner was then worth twenty-seven cents): Saab had arrived at a similar figure just for manufacturing expenses! Some frantic cost-cutting was apparently in order and such frills as an exterior trunk lid were among the first to be shelved. Ljungström and his co-workers were depressed by the cost-cutting measures, knowing the 92 was now less than it might have been. Ironically, Volvo wasn’t able to sell their new car, the PV 444, for the projected price after all. They had underestimated their figures and raised the price to 8000 kroner, some 800 more than the 92.

While a number of subsequent Saab 92 prototypes were built on a wooden jig in 1947—in June that year the car had its press introduction—efforts were under way to acquire the necessary machinery to put the car into production. With European heavy industry still largely decimated, Saab turned to the U.S. and contracted for three presses from Clearing Machine in Chicago to stamp out body panels. As Saab engineers waited anxiously for the chance to build the first production 92, the presses—the largest weighing ninety tons—presented nearly insurmountable problems of transport through the Trollhättan locks and under bridges. When they



finally did arrive at the factory, one of the presses was found to have been delivered upside down, causing further delay. Then after the huge machines were at last set up, Saab's engineers and workmen realized to their dismay that no one knew how to turn them on. The controls and circuits were quite different from European machinery.

The momentary befuddlement was soon overcome of course and towards the end of 1948, a pre-production run of twenty cars was built and in October 1949, *The Autocar* presented a detailed report and driving impression of the new Saab 92. The magazine's tester congratulated Saab and Gunnar Ljungström on a car with "the road-holding of real sporting machinery" and "found it very difficult to fault on any major point."

The Saab's simple plain-bearing engine was mounted transversely in front of the front axle, its generator belt-driven from a take-off on the three-speed gearbox. Like all Saabs until 1971, the 92 was fitted with a freewheel device in the transmission. This was an obvious necessity with a two-stroke, for if subjected to normal engine-braking type driving with their throttles closed, two-strokes suffer insufficient lubrication and eventual failure. If the engine could not be used for braking—two-strokes develop relatively little retarding power anyway—freewheeling did have the advantage of helping achieve 40 mpg and permitted clutchless downshifts (Saab never recommended clutchless upshifts, however, pointing out that excessive synchro ring wear would result). Longevity of the 92's powerplant was generally good, some examples covering 150,000 miles.

"Although the Saab 92 bristles with many novel features," concluded *The Autocar's* road tester, "it is its performance that wins the day. As a medium for putting in fantastic average speeds over rough, twisty roads it has few rivals in its

class....I cannot help thinking about the performance it might put up in, say, the Monte Carlo Rally, with a slightly hotter engine ....The Model 92 is definitely a sports car in spirit. It will provide the Scandinavian motorist with considerably more than just family transport at a fairly low price."

The magazine's prediction of competition success was to be quickly fulfilled thanks to Saab's chief test engineer, a twenty-five-year-old car enthusiast named Rolf Melde. Melde proved an ideal addition to Saab when he joined in 1946 and together with Ljungström and Sason was one-third of a redoubtable trio. Two weeks after the first production car left the factory in 1950, Melde won Sweden's popular Winter Rally. Almost from the beginning then, rally enthusiasts turned to Trollhattån for cars, among them Norway's Greta Molander who posted an impressive string of first places in the Ladies Class, winning it at Monte Carlo in 1952 and taking the Women's Rally Championship in 1953.

While Molander, Melde and others were showing what the Saab 92 could do in competition, rank and file motorists were anxiously waiting for cars of their own. The market was so obvious that Saab was not the only Swedish firm—other than Volvo—hoping to serve it. In 1946, Sweden's largest car dealer, Gunnar Philipson, decided to build a Swedish car patterned after the D.K.W. which he had so successfully imported before the war. A prototype—labelled the Philipin—was constructed near Stockholm during 1946 by Svenska Bilfabriken, the former assembler of Dodge and Plymouth cars in Sweden during the Thirties. Philipson scrapped his plans when he learned of the Saab 92—as did a Danish Volvo dealer who had planned a two-stroke car of his own—and instead contracted with Saab to purchase and sell all the cars they could build, initially some 8000 or the anticipated full production of the first two years.





Yet despite a ready market and established outlet to sell its cars, Saab was unable to meet its modest goal of 4000 vehicles during the first year and in 1950 turned out but three cars per day, a total of 1246, all of them painted green. The difficulties in producing a new automobile are legion, however, and Saab management was not overly distressed by the initial problems. The airplane branch of the company was doing well—having received a substantial boost from the advent of the cold war—and the automotive executives were concerned primarily with establishing a sound basis for future production.

Although the cars were in demand and popular, Gunnar Ljungström—ever the perfectionist—was anxious to move ahead and improve. “People were expecting a lot from Saab,” he told me forthrightly and perhaps a little ruefully, “much more than they actually got....I was always saying, ‘we can’t be satisfied.’ But the directors would point out that Philipson was satisfied. Well, it was a seller’s market to a very pronounced degree.”

Still, changes were made and the 92 received a larger back window, exterior trunk lid and with the introduction of the 92B in 1954, 28 hp and some new trim. By March 1954, some 10,000 Saabs had been built and the company expanded its facilities to Gothenburg—forty-five miles south of Trollhättan—where all engine and transmission assembly was now centered. In 1956, a new Saab was introduced, the 93, boasting a redesigned suspension—coil springs all round and a U-shaped beam rear axle—and a new two-stroke engine.

The 93’s powerplant was a three-cylinder 748 cc unit that developed 33 hp and had a substantially smoother idle than its predecessor. Very similar in appearance to the D.K.W. two-stroke, Saab’s new aluminum head engine was, in fact, designed by Hans Müller, an independent engineering consultant who had also been

retained by the German company before the war. The new engine’s built-up crankshaft rested in four hefty roller bearings while the wrist pins were supported in needle bearings. It was mounted in a normal front to rear position with the radiator behind it—as in the 92—and cooled by a belt-driven fan. A rather novel device, the fan was affixed to the end of a shaft which ran above the engine from its pulley at the engine front to the rear of the block where the fan itself was mounted and protected by a wire shroud. Humorists promptly recognized the set-up as a single overhead fanshaft but the fan did much to solve cooling difficulties sometimes encountered with the earlier 92.

Perhaps the most important change Müller effected when compared to his earlier D.K.W. engine was a replacement of its make-and-break, three coil ignition system with a standard coil and distributor. The distributor’s location, however, at the very front of the engine, proved to be a problem which bedeviled Saab drivers for almost a decade. Exposed to the elements, though supposedly protected by both a metal shield and a curtain operable from within the car, the distributor was prone to drowning in the rain—this in addition to the two-stroke’s normal sensitivity to moisture in its ignition system. Various distributor caps were developed by Saab, the most ingenious and last word appearing in the Sixties. This cap was force-ventilated by a plastic hose some three feet long which carried air from the cowl air intake to the cap itself in an effort to keep things dry. Even this wasn’t always sufficient and Saab drivers were well-advised to thoroughly and carefully cover their car’s distributor with a plastic bag to help keep out water. The problem was finally solved for good in 1965 when the radiator was moved in front of the engine increasing the car’s length a few inches and permitting a conventional fan and generally-improved cooling system as well.

*Two 1963 Saabs, the rugged 95 station wagon with rear window spoiler and the 96 which boasted increased power and more rear seat and luggage room than the 93.*

Although the 93 was undoubtedly an improvement on its forebears, and gave Rolf Mellde more opportunity for tuning and development, Gunnar Ljungström was already unhappy that the rudimentary two-stroke engine had been retained. "By 1950, it was no longer right," he believed. "By then we could see that cars would not remain so elemental for long." But if Ljungström detected a shift in the marketplace towards a more refined expensive car as people began to enjoy greater postwar prosperity, Saab had by now become successfully associated with two-strokes and management opted to continue its strategy of providing inexpensive, safe and durable transport. And a four-stroke didn't fit in.

Then too, the two-stroke's advantages, as Saab was quick to point out, were obvious and attractive. For one thing, of course, a two-stroke was simpler than its four-cycle brethren, lacking the many parts needed for a valve train. The case may have been oversimplified at times but the three-cylinder engine did have only seven basic moving parts: a crankshaft, three connecting rods and three pistons. Tune-up costs were correspondingly low and there have been few cars faster or easier to service than a two-stroke Saab. Cold weather starting was another advantage: with no crankcase oil to thicken overnight, the two-stroke could be counted on to spin readily to life.

Of course there was never any oil to change either but this was ever a dubious blessing since many potential customers were doubtless scared off by the necessity of adding a quart of oil and then their eight gallons of gas. This problem didn't exist in Sweden—where premixed fuel was sold at the pump—as much as it did in the U.S. and was largely solved altogether in the mid-Sixties when oil-injected versions were introduced. By then, as we'll see, it was too late. Whatever its irritants though, the Saab 93 and its successor were very reliable cars if maintained well and driven with understanding. The two-stroke engine, infamous for its pop corn machine idle, was turbine smooth at speed and quiet as well.

Up until 1956, Saab had concentrated primarily on the Scandinavian market. Now, with the 93, Saab president Tryggve Holm—a strong and resourceful executive—hoped to sell cars in the U.S. too, if even in a small way. This wasn't the very first Saab effort in the U.S. for in 1950, Saab's U.S. representative had examined the 92 with an eye towards reducing tooling problems. At that time, Ralph Millet, an M.I.T.-trained engineer who was concerned mainly with purchasing aircraft components in the U.S. for Saab, demonstrated the 93 to Willys-Jeep which was interested in a possible license. In the end, neither Willys-Jeep nor Ralph Millet really believed Americans would buy a two-stroke car and there the matter rested until Holm entered the picture.

"My response was negative," Ralph Millet told me of his reaction to Holm's proposal. "I believed that selling two-strokes in the U.S. was impossible. Gunnar Ljungström agreed."

Nevertheless both men found themselves and ten Saabs on hand for the first International Automobile Show at the New York Coliseum in 1956. The extent of Saab's marketing research had been Holm's impulsive yet intuitive idea. "We were just sort of another car at the show," Millet remembered, "not all that exciting but a few dealers did approach us and various overtures were later made by Alec Ulmann and also a nibble from Max Hoffman as possible distributors. But we didn't know what to tell them. We were not incorporated in the U.S. as a car company but just had a purchasing office for aircraft components. Then too I had difficulty getting decisions out of Sweden as to which way they wanted to go."

Ljungström confessed surprise that there was any U.S. interest at all in the little



car. "I didn't think it could sell there," he said. "Or if it did, I didn't think it would last long. I felt its price would have been too high (the Saab 93 cost \$1895)."

While the indecision in Sweden continued, Millet who found himself with ten Saab 93's on his hands, used his own initiative to form a little company called Saab Motors and sold the cars to new car dealers in the Northeast. He found himself involved in preparing them, delivering them and setting up a spare parts department, the latter in an office closet. In the fall of 1956, the parent company took over Millet's New York organization, named him president, and decided to look more seriously at the American market.

Concerned now about getting some publicity for the new import, Millet suggested that the Great American Mountain Rally in New England would be an apt proving ground. The factory was intrigued enough to send over Rolf Mellde and a second car was entered for American sports car enthusiast Bob Wehman and his navigator Louis Braun. Thus two Saab 93's were among the event's sixty-two starters, all cars flagged off on a November midnight from New York City's 79th Street Boat Basin by Juan Manuel Fangio and honorary starter René Dreyfus. To the astonishment of everyone—except perhaps its crew—the Wehman/Braun Saab won the event outright and Saab also won the team prize, with Mellde, though he'd had some trouble, finishing sixth. After the rather disorganized arrangements at the car show, Saab was now getting off to a more promising start in America.

Saab wisely concentrated its initial U.S. efforts in New England where the car's strongest points—its powerful heater, fine handling on ice and snow and all around toughness—would show to best advantage. With delightfully accurate steering, an honest top speed of 75 mph, roomy interior for its size and tremendously strong front end and clutch, the Saab offered more car than many of its competitors and a



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growing coterie of enthusiastic owners took every chance to demonstrate this. A disproportionate number of those early Saabs seemed afflicted with racing stripes.

Saab's dealer network was small, however, and by 1958, a serious problem with the U.S. cars had become apparent. Without premixed fuel, mixing problems with the oil and gas were accounting for too frequent engine failure. Saab was faced with so many breakdowns that a rebuild center was opened at its headquarters—now in Hingham, Massachusetts. The company was liberal with its warranty claims though and survived the worst of the crisis until an oil which better mixed with gas was developed and sold as Saab Oil through dealers.

Back in Sweden, Rolf Melde was diligently working away at improving the 93's performance and in 1958, Saab was ready to introduce the first of its hotter models, the 750 GT. Essentially a racing/rally car in street guise, the \$2600 GT with its supremely comfortable reclining seats, Halda speed pilot, wooden steering wheel and throaty exhaust, proved a shock to road testers.

"It is difficult to explain how so much performance can be obtained from  $\frac{3}{4}$  liter," wrote *Road and Track* in May 1958. "But the fact is that . . . this car is faster than several highly respected 1500 and 1600 cc machines and nearly as fast as one of the more popular two liter sports cars." The little sedan reached 60 mph in 12.0 seconds with its special tuning kit (different exhaust and carburetor) and the road testers estimated its top speed as "awfully close to 100 mph."

The advent of the GT began a sort of two-model policy at Saab for when the 96 version was introduced in 1960—with a larger 841 cc 42 hp engine, revised rear end styling with increased luggage space, flow-through ventilation, and new instruments—a more powerful version soon joined it. By then, a station wagon—the 95—had also been introduced (in 1959), rather novel in that it could carry 2000 pounds, more than most of its competitors, and also incorporated a rear window spoiler, a partially successful and much-copied effort to keep that window free of road grime.

The 96 continued Saab's careful efforts to build a truly safe car. Like the 93, it

had rollbar-like reinforcements in its roof pillars (a Saab ad once depicted a 96 tumbling down a ski slope only to be calmly started and driven away), crushable energy absorbing front and rear body sections, an easily deformable instrument panel and pop-out windshield. Long before it became a U.S. government requirement, Saab introduced a dual brake system in 1964. Even this received some ingenious thought when compared to the vast majority of such systems which would follow some six years later. Saab's brake system was of a diagonal design. That is, one would be left with either left front and right rear or vice versa rather than simply front or rear brakes. Thus, the Saab could stop faster and straighter than, say, a car with its back brakes only. Saab also pioneered shoulder seat belts which are quick and comfortable to use and unrivalled by anything from Detroit. (Seatbelt use is now law in Sweden and fatalities have been reduced without resorting to the expensive and wasteful foolishness of ESV vehicles or airbags.) Since Saab sales have increased steadily, one can only conclude that contrary to what manufacturers in this country believe, a safe car can still be appealing.

As Saab moved into the early Sixties, the company used its new 96 model and the talents of an enormously gifted young driver to mount a concerted rally campaign. That driver, of course, was Erik Carlsson—a fearless rallyist who possessed the peculiar ability to drive cars sideways on glare ice just as fast as straight ahead on dry roads—and he soon became an invaluable public relations asset to Saab. A friendly colorful man who once described Swedish mosquitoes as being "as big as Russian helicopters," Carlsson's sometimes overexuberant driving style soon earned him the nickname Carlsson on the Roof as Erik routinely took advantage of his car's sturdy build.

For three straight years, 1960, 1961, and 1962, Carlsson and his howling red Saab won the RAC Rally, a display which made Saab a viable car on the British market where its popularity and sporting reputation continue today. (Saab narrowly missed winning the RAC again last year—they had won overall in 1968 and 1971—finishing second after a tremendous come-from-behind effort by Blomqvist



who finished ahead of a Lancia Stratos among others.)

But it was Carlsson's back-to-back overall wins in the Monte Carlo Rally—1962, 1963—which were, perhaps, even more significant. Rather than the dismay of some more traditional enthusiasts, Carlsson's Monte wins proved that an unpretentious relatively tiny car can be more than a match for the very fastest sedans and sports cars. In 1962, Erik's time over the rally's special stages was five seconds faster than that of second-place finisher Bohringer in his 220 SE Mercedes-Benz. Carlsson maintained his lead during the final day's race through Monte Carlo to score his win.

The story was much the same in 1963 except that the competition was even tougher as Ford, anxious to score a victory in the Monte, spent considerable sums of money to field a team of specially-equipped Falcons. The fact that Bo Ljungfelt's Falcon was fastest over the rally's special stages—though not fast enough to overcome his handicap based on the Ford's hefty displacement and thus win the rally itself—prompted so much Ford advertising that Saab (seldom an innovator in its promotion) was forced to ask in its ads, "Who Really Won?" Still Carlsson and navigator Gunnar Palm had beaten a team of seven Fords, among others. A year later when Erik placed third in the Monte, his wife Pat Moss—an equestrian and driver of great talent—finished fifth in her Saab and was presented the Ladies Cup by Prince Rainier and Princess Grace.

Erik Carlsson's other rally wins are too numerous to list here. Perhaps his greatest disappointments were hitting an anteater and thus losing the 1963 East African Safari while leading and the troubles which plagued him during the 1969 and 1970 Mexican 1000. Erik was forced out both years, once when he suffered broken driveshafts and later when he became stuck in sand. (Another Saab driven by California dealer Ingvar Lindqvist won the passenger car class both those years.)

With the rally successes of the early Sixties, Saab changed the name of its GT models exported to the U.S. In 1964—a year Saab reached a new sales high of 29,000 cars in Sweden—the hotter version of the 96 was labelled the Monte Carlo

and this \$2800 car was probably the most exciting Saab sedan exported to the U.S. Boasting the interior refinements of earlier GT models, the Monte Carlo was the first Saab equipped with an oil-injected engine. The powerplant's oil reservoir needed filling every 1500 miles and ended the necessity of adding oil each time the tank was replenished. The Monte Carlo engine—fitted with a special crankshaft with larger webs to increase crankcase compression, modified porting and three downdraft Solex carburetors—developed 57 hp, one horsepower for each cubic inch. The powerplant now drove through a four-speed gearbox and the car was fitted with front disc brakes and radial tires as standard equipment.

The deep yowl of a well-tuned Monte Carlo accelerating hard did nothing to lessen the enthusiasm of Saab buffs who if never a very sizeable chunk of the sports car scene were certainly among its most devoted. It would be fair to say that Saab drivers have never been overimpressed with high horsepower figures or high style and that for them, the Monte Carlo represented a sort of ultimate. Incidentally, the snub-nosed 96 and Monte Carlos were perhaps the best-handling of all Saab sedans. The car's feel changed minutely in 1965 when the front end was lengthened and changed greatly when a major revision was made in 1967.

The Monte Carlo shared one mechanical feature with its predecessors that has been frequently criticized by motoring journalists and added another problem largely its own. Like all Saabs until the 99, the Monte Carlo had a column-mounted shifter and many sporting drivers would have preferred a floor shift. To be fair though, the linkage was, and is, very short of throw if a bit notchy and, on earlier cars, prone to irritating vibrations. Why Saab in all these years has never installed a floor shift has been disappointing and perplexing though it seems to have been a matter of economics.

The Monte Carlo's other problem—found to a lesser extent in the milder single carburetor 96—was more troubling. The car had a voracious appetite for spark plugs and not only was plug life a relatively short 3000 to 6000 miles but the plugs were prone to fouling, especially in city driving. Plug fouling was made more acute by any other weakness in the engine, a cracked distributor cap, faulty plug lead, or carbon-filled rear muffler. The problem inspired considerable ingenuity on the part of drivers—who learned to change a plug in perhaps two minutes—and dealers, who often installed capacitor discharge ignition systems, and finally Bosch. The German company eventually developed a platinum-tipped spark plug, its electrode largely protected by a shield. It can be pretty safely stated that the harder one drove his Saab, the less fouling occurred. It can also be safely stated that plug fouling eventually accounted for many engine failures as mechanics untrained in the ways of two-stroke fault-finding often attempted to cure the problem by simply installing hotter plugs. The predictable result was a holed piston or seized engine. An insensitive Pennsylvania Pontiac dealer who also sold Saabs once told me he'd seldom seen a Saab last for more than 10,000 miles. Like all too many U.S. dealers, he had never bothered to really learn about the product he was selling. A well-maintained two-stroke was probably at least as long-lived as any other small sedan and engine rebuilds or replacements were also relatively inexpensive—\$200 on an exchange basis.

Saab sales in the U.S. began at some 1500 cars per year in 1956 and 1957 and rose to 4600 by 1960 when Saabs were being sold in the south (with louvered hoods to improve cooling) as well as New England. In 1960 Saab moved its U.S. headquarters to New Haven, Connecticut as sales continued a slow but steady climb and reached close to 7000 in 1966 when Saab expanded its dealer network to include



Oregon and Washington.

Though the U.S. market appeared fairly strong, Ralph Millet was by then pushing hard for oil injection as standard equipment on all Saabs knowing this would make the car more saleable. If comparatively expensive to produce because of the more delicate casting required by the engine's oil feed lines, an oil injected 96 was at last offered in 1967 at which time the car also received three carburetors as well. The Monte Carlo retained a substantial horsepower advantage over the 96 though, 60 hp to 46. But even the 96 was capable of silent easy cruising at 70 mph.

In Sweden during 1966, however, sales were not going well for Saab. There the market had dwindled drastically from 26,000 cars in 1965 to 19,000 in 1966 and though Ljungström, Mellde and other engineers had been experimenting with a variety of new higher power two-stroke engines—including a lovely six-cylinder version and one with both oil and fuel injection—it seemed clear that the time had finally come for a change to a more conventional powerplant. In 1966 Mellde hinted to Ralph Millet that such a change might soon occur but officially Saab was still firmly committed to the two-stroke and had even developed a special oil concentrate designed to reduce smoking and emissions.

Meanwhile both Ljungström and Mellde were casting about for a likely engine alternative and Ljungström wrote Lancia about the possibility of using their V-4. Lancia wanted a more formal overture, however, from company officers and the matter ended there. But Mellde had better luck when he opened negotiations with Ford of Germany about possible purchase of their V-4.

Ford and Saab had first cooperated when Ford—intrigued by the novel 93 with its clever use of space—had purchased some twenty cars for study as it began the abortive Cardinal project in 1962. Now Mellde acquired some of the V-4 engines—eventually used by Ford in the bland Taunus—for testing. Though the powerplant had actually proved rather troublesome for Ford, Mellde solved any difficulties on an elaborate engine test bench he developed.

In the spring of 1967, after much soul-searching and debate, the decision was made to purchase quantities of the V-4—with Mellde's improvements—from Ford for use in the 96.

"This was a dramatic time at Saab," PR director Hans Törnqvist told me. "Sales were dropping and it was absolutely necessary not to let people know of the impending change or sales would drop even more." Törnqvist and his associate Sten Wennlo finalized plans for V-4 spare parts and special tools on their own, aboard a boat cruising in the Swedish archipelago. The secrecy paid off for when the 96 V-4 was introduced in 1967, it was a bombshell surprise. Hardcore Saab enthusiasts may have been shocked and dismayed but the engine saved the Saab car division. In Sweden during 1967, 24,000 V-4's were sold compared to 500 two-strokes. By contrast, 6800 two-strokes were sold in the U.S. that year along with 3500 V-4's.

Nineteen sixty-eight marked the last two-stroke Saab model. Reduced to 817 cc displacement to skirt emissions laws which began with engines displacing more than 825 cc, this final two-stroke was dubbed The Shrike by J.L. Mathis, then Saab's U.S. ad agency. Since Shrikes are birds which survive largely by eating beetles, the name's derivation—perhaps based on Saab drivers' longstanding scorn for VW's—is obvious. Besides a new name, the car offered something that remains unique in terms of automotive warranties. A Shrike buyer could get a lifetime engine guarantee.

With the addition of the V-4 engine, the Saab 96 suddenly became a much more

conventional car and appealed to a wider segment of the marketplace. In fact the engine looked like it had been designed for the 96, fitting in perfectly where the two-stroke had formerly resided. A substantial gain in power and torque was evident, the 1498 cc V-4 delivering 73 hp at 4200 rpm and 85 lb/ft of torque. Don't let the figures fool you though: the V-4 was little if any faster than a Monte Carlo. There really is something to that old D.K.W. ad claim for its three-cylinder two-stroke: "3 = 6."

But the point was, as far as Saab was concerned, that the new car did everything with no fussiness, fouled plugs, drama, or oil mixing. Those first V-4's easily averaged over 32 mpg and the engine's durability and low oil consumption became so well known that hapless German Ford salesmen in Sweden began pointing to their Taunus as the Ford with the Saab engine. Besides all these benefits, the V-4 would also prove very clean and when tougher U.S. emissions laws were effected during the early Seventies, it was able to meet them with merely a displacement increase to 1700 cc, lowered compression, and modified carburetor jets and ignition timing.

Gunnar Ljungström was pleased with the engine and glad it was the one chosen. "I don't think the Lancia would have been as durable or inexpensive," he told me. Though Ljungström remains interested in two-stroke engines and has many ideas for highly sophisticated versions, he had no regrets when Saab dropped the two-stroke.

If the new engine made Saab a far more viable force in the general market (by 1970 22,000 were sold in Sweden in addition to 12,700 99's), what did it offer the enthusiast? Here there was a problem. The engine added about a hundred pounds weight to the car's front and though this increased traction in snow, it also added undesirable understeer and the suspension was not adequately beefed up to counter this. Over the *yumps* where the two-stroke had happily gone airborne, landed and continued, the V-4 bottomed its suspension with an awful clunk and wallowed. On twisty bumpy roads, there was no way it could keep up with a two-stroke. The engine's greater weight had an additional unexpected effect: after a year or two, the front springs of those first V-4's began to sag under their additional burden, a problem Saab quickly rectified.

Introduction of the V-4 also marked the end of the Monte Carlo model. Although a few hundred V-4 Monte Carlos were built in 1967, they had only the more expensive car's plush interior, no engine refinements at all. Thus Saab left the sports sedan market and although a catalogue full of competition parts was available in Sweden, these bits were always hard—eventually impossible—to obtain in the U.S. Once fairly common fixtures at eastern hillclimbs, rallies, autocrosses and even some track races, Saabs have become rare if not extinct in most U.S. motor-sports except ice racing. (During the early Sixties an effort was made to establish a Formula S class based on Saab components. Though the cars were interesting, there was no hope of their rivalling the already wide-spread Formula V and the class died.)

In Sweden the story is different. There rallying enjoys the popularity of, say, football in the U.S., is televised on the evening news and participated in on an amateur level by many Swedes. This Scandinavian sport has no real U.S. equivalent, the rallies' special stages arranged on narrow twisting dirt roads that snake their ways through the dark Swedish forests. Once covered with ice and snow, these roads might be safely negotiated at some 20 mph by the average driver. The Saab rally boys—using freewheeling and braking with their left foot while keeping

the revs up with their right to break the tail loose—happily clock off 95 mph and better. There are nearly 4000 licensed Saab rallyists in Sweden alone and Saab contributes some \$15,000 annually as prize money for them.

Each year the Saab competition department under the cool and methodical leadership of Bo Hellberg and Bo Swaner meticulously prepares six to eight orange V-4's taken straight off the assembly line. Chassis modifications are straightforward: an engine sump guard, interior roll cage, quick action jacks, leather hood strap, aluminum wheels, stiffer springs, Bilstein gas-filled shocks and competition brake pads. It is the engine which receives more dramatic treatment. Fitted with forged pistons that increase the V-4's compression ratio from 8:1 to 11:1, larger valves, oil cooler and an impressive pair of double choke Weber carburetors, the engine's output has been raised to 170 hp. The added power necessitated a beefier gearbox with revised ratios and a limited slip differential.

The latest rally cars have proven quicker in the mid-speed ranges than even some of their Porsche and other more modern rivals. "It never fails to surprise," wrote *Motor Sport* after Blomqvist's near win in the 1974 RAC, "how anyone can drive a... Saab with its relatively old-fashioned design and the V-4 engine which Ford decided should be phased out, so incredibly fast, often quicker than more sophisticated cars of higher power." A look at the Saab competition department and a quick ride with Blomqvist would, however, convince the most skeptical.

Withal, Saab spends relatively little on its competition program when compared to other manufacturers and is dedicated to entering cars which the public can buy. (Some eight fully-equipped cars were sold last year for about \$10,000 each in addition to other partially-modified 96's.) Hellberg feels that machines like the Lancia Stratos and Renault Alpine do not meet the spirit of rallying, being primarily very expensive pseudo racing cars not generally available to the public.

Saab participates in rallying today both for public relations purposes and as a means of testing cars and has been successful on both counts. It has limited its rallying in the last few years to mainly Scandinavian events or those like the RAC which stress rough conditions rather than open road racing. The factory enters two cars—one for Blomqvist, the other for Per Eklund—and each is serviced by mechanics whose legendary efficiency has become a great show for spectators.

The Saab 96 continued to be sold in the U.S. until 1973 although there had been little or no advertising for the car since 1970 when new Saab executives took over in Connecticut and—to the chagrin of Saab enthusiasts—decided to ignore the 96 and concentrate on the more profitable 99, of which more later. By the time the 96 ceased to be imported here, it had reached a state of development seldom achieved in any car and provides its owners with an entertaining robust vehicle of relative simplicity. Saab cited the cost of further cleaning up the V-4 as the reason for the 96's disappearance from the U.S. market though this seems a rather weak excuse as today's overall economic conditions would seem to make the car more attractive than ever. As the 96 remains popular in Scandinavia, it may be only the cost of constructing the car which finally ends its production cycle. It wasn't designed for mass production in quite the same terms as the 99—those three old presses bought from Clearing are still in use—and requires more handwork and costs proportionally more to build than the newer car.

The 96's fiberglass-bodied two-seat derivative, the Saab 97 or Sonett continued to be sold in the U.S. through 1974. (Contrary to what you may have thought, Saab did not misspell the name of a fourteen-line poem in choosing the 97's appellation. In Swedish, Sonett means "so neat" though Saab has overlooked explaining this to

the very U.S. buyers at whom the car was primarily directed.) Although a two-seat version of the 96 seemed like a natural to many Saab enthusiasts, the idea never received much enthusiasm at the works. As early as 1956 though, Saab did consider the idea, and Rolf Mellde then designed a two-seater based on the 93's components. Capable of 110 mph, the little car—of which ten were built—became the first in a series of prototypes as Saab moved ever so hesitantly towards production of a sports car, a style which has never been an important factor in the Swedish market.

In 1965, under mounting pressure from American dealers, Saab executives asked both Sixten Sason and independent designer Bjorn Karlström to come up with possible sports cars, the earlier Mellde Sonett outdated. The sober Gunnar Ljungström considered the whole idea folly, termed its eventual result "useless, expensive and foolish" and asked to be relieved of any association with the project—which he was. Sason's Sonett design used many 96 chassis parts as well as the 96 windshield and was less extreme than Karlström's tiny fast-back design. It was this latter car which was chosen for production.

In early 1967, the Sonett II was introduced at the New York auto show. The unveiling was premature for it would be several frustrating months before Saab dealers would be able to get any cars to sell.

Initially powered by a Monte Carlo two-stroke engine tuned for 66 hp with three sidedraft carburetors (to fit beneath its low hood) and weighing but 1562 pounds, the Sonett II was an exciting relatively clean-lined car. Even more nimble than the sure-footed sedan and with its thinly padded fiberglass seats offering a reclining driving position, it was fast and immensely rewarding to drive. Only the shift lever, still on the column, marred this tiny roll bar-equipped sports car, for the linkage was poor unlike the sedan's. A relatively few Sonett II's were built—costing \$3450 each—when the V-4 was shoehorned in under an awkward hood bubble towards the end of 1967. Now called the Sonett V-4, the car of course gained weight and its handling suffered.

Unfortunately the V-4 Sonett was never offered with increased power over the 96, the sole engine modification being stiffer valve springs. Thus, instead of becoming a real competitor for higher powered sports cars and a force in SCCA racing, the Sonett was largely relegated to the status of an enjoyable toy. The rather unfortunate amateurish appearance of the early V-4 versions drew so much criticism that in 1970, Saab introduced the Sonett III with a body redesigned by Sergio Coggiola. This model was a huge improvement in terms of styling and with retractable headlights and the same high quality fiberglass work that characterized all Sonetts, immediately attracted favorable comment. It even had a fairly pleasant floor shift. The Sonett III was built in limited quantities for four years—some 2000 per year—and is a thoroughly enjoyable economical little GT with ample luggage space beneath its lift-up rear window. If only Saab had built it sooner and gone farther....

With both the Sonett and 96 off the U.S. market as of 1975 (the Sonett succumbing to the same reasoning that ended the 96's importation), Saab is left with its larger more expensive car, the 99. First shown to the public in 1967—though Swedish journalists had been trying for months to scoop the company, one reporter even attempting to climb a factory fence and sneak a look when he was caught by police—the 99 is the new generation Saab intended to carry the company at least through the Seventies.

Work on the 99 was well under way by the early Sixties and the project ulti-







mately consumed some 400,000 man hours of development work. Again Sixten Sason was a catalyst. "It was Sason's initiative originally to show sketches for a new car," recalled Ljungström who viewed the idea as a way to begin anew and work in features he'd been unable to use on earlier cars. "I've been known as always being unsatisfied," he told me. "But I must say that it was a tremendous satisfaction to work on the team that did the 99."

That team, which included a gifted young designer named Björn Enwall who is today head of Saab's styling center, based the new car on many of the same premises which had guided the 96's development. These included good handling, safety and economy. Tragically, Enwall's mentor and the man who contributed so much to the 99 did not live to see the first car completed. Sixten Sason died seven months before the car's first showing.

Although Rolf Melde was very interested in the possibility of using Wankel power for the new car (the 99 was initially code-named Gudmund for it was on Gudmund's Day, April 2nd, 1964—in Sweden each day has a name—that the decision to produce a new model was made), the decision was eventually made to use a modern four-stroke instead. Tryggve Holm discussed the engine with Ricardo in England and contracted with the British firm for several prototypes—ohc in-line four-cylinder units of 1.5 to 1.8 liters. By 1965, the first of these was being tested in a camouflaged 99, a pregnant-looking gray 96 all the dimensions of which had been increased to incorporate the larger car's running gear.

As other prototype engines were built for testing, Saab and Melde became deeply involved in the engine's development. The Swedes frankly found their own standards higher than those of their English collaborators and pushed for reduced oil consumption and four hundred hour intervals between valve adjustments. Both goals were achieved. The Saab 99's engine has been continually improved by Saab development engineers and today can meet even the 1975 California emissions requirements without resorting to a catalytic converter.

It was during a meeting with British Leyland's Lord Stokes that Tryggve Holm learned Triumph was then planning an engine similar to Saab's. As Triumph had ample facilities to build such engines and Saab had nearly completed development of a powerplant that suited Triumph's requirements, a decision was made to cooperate. The Saab-designed engine now powers both the Triumph Dolomite and the new TR-7 though the Triumph-built engines differ in both displacement and detail from those used and built by Saab.

Saab's new model was introduced for sale in November 1969, a 1.7 liter 87 hp car of 2500 pounds. Like previous Saabs, the 99's styling emphasized aerodynamics—the drag coefficient was a low 0.37—and it epitomized the modern design concept of great interior room with modest exterior dimensions, an idea which is perhaps only beginning to lose revolutionary connotations in Detroit. Again like its predecessors, the 99's shape stresses function not styling and all Saabs have been designed with a philosophy similar to that once expressed by Sir Alec Issigonis. "Styling," said the Mini's architect, "is designing for obsolescence." The 99 remains a pleasant looking still unique car seven years after its introduction and should remain so for some time to come.

Like any new car, the 99 was not without its share of troubles during its early years. A bad batch of glass from a supplier was responsible for many breakages when the doors were slammed with the windows down. Transmission failure both with the manual and three-speed Borg-Warner automatic—the latter transmission's problems caused by dirt in the oil passages—also took its toll. Then too it was only

with the switch to mechanical rather than electronic fuel injection that problems with the "black box" have been eliminated.

Today, however, the 99 stands as one of the most desirable cars in the mid-priced sedan class. Much of the earlier version's understeer has been eliminated and power increases—as high as 110 hp—make the 99 enjoyable to drive. Even the more modestly-powered models were capable 90 mph tourers though and like all 99's, very comfortable. Fitted with generously proportioned four wheel disc brakes, the 99 offers a well-balanced package that was named Sweden's car of the year in 1972, a year when it became the first non-British car to win Great Britain's prestigious award for auto safety, the Don Safety Trophy.

The 99 shares with the 96 Saab's latest efforts in the auto safety field. Saab pioneered a heated driver's seat—fully automatic and thermostatically controlled to operate when the temperature falls below fifty-seven degrees—and whatever the medical benefits Saab attributes to not sitting on a cold surface, the sensations produced by the device can best be described as simply...fun. Saab also invented a system of headlight cleaning that includes both a washer and wiper blade for each light. Thanks to benighted U.S. lighting laws which disallowed all rectangular headlights until 1975, this obviously advantageous feature has so far been illegal here. Both the headlight wipers and heated seat have already been copied by Saab's competitors in Europe.

If Saab was the first automaker with heated seats and headlight wipers, the little company also developed the very first bumpers capable of meeting U.S. five mile per hour crash requirements. Of plastic cellular block construction, the bumpers are simple and effective, decent looking and doubtless lighter than their metal counterparts.

While Saab has continually striven for innovation in its cars, it has also worked hard to develop new ideas and methods for use in car building. Saab was the first company to introduce group assembly—at its Södertälje engine plant where it has been building the 99 engine since 1971—an effort to reduce the assembly line worker's boredom. At Saab, small groups of workers proceed at their own pace, rotating job tasks as they like. The idea has proved successful and in the demanding Swedish labor market where employers must vie for workers' loyalty, the concept has already been taken up by Volvo. Overall quality at Saab today—if not so high as in earlier years when production was much lower—probably ranks with the best in the industry. Every Saab car is tested on a chassis dynamometer before leaving the factory.

Today Saab has grown from the isolated little car maker it was twenty-five years ago. It is now part of a much larger organization—after a merger with Scania-Vabis, a Swedish car and truck builder founded in 1897—called Saab-Scania. Sweden's fifth largest company, Saab-Scania employs some 35,000 people in five divisions: aerospace, automotive, Datasaab (computers), Nordarmatur (valves) and trucks. Scania trucks are now marketed in fifty countries and the latest Saab fighter plane, the Viggen, became the largest industrial effort ever undertaken in Sweden.

Through it all Saab cars have maintained the unique qualities which have long been their appeal. In continuing the design philosophy which sets it apart, Saab has adhered to a longstanding belief of Gunnar Ljungström's, who is today a full-time consultant to the passenger car division. "I've always felt a small company should offer something different, something better," he told me. "I think it would be faulty policy to do otherwise." Saab's first quarter century has proved the wisdom of such thinking. ♠

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